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# Classy Science Acts

Educating the next generation of scientists.

***The heroes of the past century were not all from the sports world or from Hollywood. Some were scientific innovators from universities, government and industry whose discoveries propelled the United States to economic prosperity and world leadership. To ensure future science and technology progress, it's imperative we increase investment in university science programs, including agriculture, life sciences and natural resources. Through USDA challenge grants, capacity-building grants and multicultural scholars programs, Land-Grant universities are giving future scientists and life science professionals the skills and opportunities they need to succeed in a global society and ensure prosperity into the new century.***

## Payoff

- **No waste here**. Through a pollution prevention internship program, **Nebraska** engineering students helped more than 30 businesses save an estimated $1.68 million in 2000. Their projects diverted 9.12 million pounds of solid waste from landfills, reduced hazardous waste by 7,500 gallons and saved 970,000 kilowatts of electricity. **Penn State** students and faculty implemented a composting program that annually converts 726 tons of food waste and napkins from campus dining facilities into compost, saving the university up to $400 a week in waste removal fees.

- **Starting them young**. Undergraduate research projects provide valuable resume-building experience for students and allow them to make scientific contributions. **Maine** microbiology undergraduates are studying how diseases work in zebrafish, whose genome is similar to humans, so that vaccines can be created to fight viruses in people. Each summer, **Cornell** hosts more than 30 students from across the nation for a summer research experience in mathematical and theoretical biology. This effort has produced more than 50 technical reports on topics such as HIV, tuberculosis, sex education and vaccination policies.

- **Above par for the course**. The nation's Land-Grant universities offer innovative courses and delivery methods to address pressing needs, stretch resources and make educational opportunities more accessible. For example, **Florida's** doctoral degree in plant medicine, the world's first, is training "plant doctors" to diagnose and

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treat plant diseases the same way medical doctors treat people. **Maryland** offers a two-year equine business management program that trains students to sustain the state's $1.6 billion horse industry. **Texas A&M** created a course on cancer-fighting compounds in fruits and vegetables. Sixteen medical and agricultural scientists from the nation's top cancer research institutions, including Johns Hopkins, teach the course via videoconferencing to students at nine Texas universities. Most of the 27 **North Dakota State** students who minored in food safety, the nation's first such program, have taken jobs directly related to their food safety expertise. More than 2,000 students, including some from Canada, Holland and several U.S. states, have completed **Virginia Tech's** insects and human society class offered via the Web, making it the nation's largest distance-delivered entomology course.

- **It's a small, small world**. Most Land-Grant universities offer international study opportunities to help students succeed in today's global society. **Georgia** students who earn a certificate in international agriculture, which includes a six-week internship in countries such as Chile, Korea, Morocco and Uganda, are hired over applicants who have more advanced degrees but no international experience. As part of their international experience, **Arkansas** students have reviewed the fee structure of extension programs in Scotland, worked at an economic development agency in Belgium and studied marine biology in Denmark. One **Ohio State** student who traveled to Brazil as part of a leadership development program said the international experience changed his life. "When I started it, all I ever wanted to do was go back and take over the family farm. Now I see everything on a global perspective and that there are many things I can do."

- **Lessons in leadership**. **Alabama A&M**, **Auburn** and **Tuskegee** have teamed to offer a leadership development course that prepares Alabama students to face quality, ethics and justice issues in the agricultural and environmental science industry. One of the 21 graduates said, "I have more confidence in who I am as a leader and understand that leadership and followership are critical in society today." A similar collaboration has been created among **South Dakota State**, **North Dakota State**, **Minnesota** and 11 tribal colleges in this three-state region.

- **They've got good genes**. Of the 180 students who have graduated from **Rutgers**' biotechnology program in New Jersey, five have won National Science Foundation predoctoral fellowships, and nearly all have positions with prestigious graduate, medical or veterinary schools or with biotechnology-related businesses. **North Carolina A&T**, **Arkansas** and **Delaware** also offer undergraduate biotechnology certificates and courses.

- **Changing faces in science**. **South Dakota State**, **Oglala Lakota College**, **Si Tanka College** and **Sisseton Wahpeton Community College** work together to encourage more Native Americans to graduate with science degrees from four-year universities. South Dakota State faculty are collaborating with these tribal colleges by helping them improve research and curriculum programs and by serving as visiting lecturers.

- **Skills for successful scientists**. A 10-week **Illinois** "teaching college" transforms current and future scientists into equally adept teachers of tomorrow's workforce. One participant said that he's "more aware of whether my students are actually learning or if I am just teaching." A **Nevada** course advises graduate students on how to present scientific data to grant review panels and the general public. One student said that the class helped "smooth the transition from student to scientist."

**Cooperative State Research, Education, and Extension Service**
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